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Rheumatoid Arthritis

A Nursing Clinical Conference

Nursing Department

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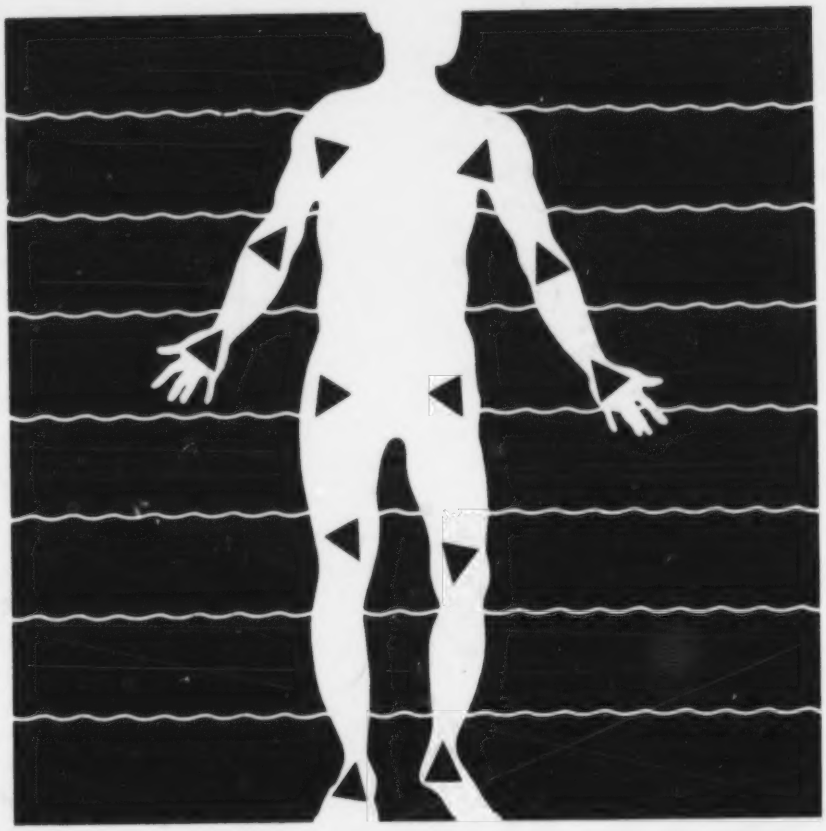

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Foreword

The Nursing Department of the Clinical Center, National Institutes of Health records in this monograph our unique contribution in the provision of nursing care and support to clinical investigation in this research hospital. The continued learning resulting in the acquisition and maintenance of new knowledge and skills is evident.

We look forward to embarking on a nursing research course to assure that professional nurses at the Clinical Center practice using the latest available knowledge. Sharing our findings and clinical practice applications with our public becomes our commitment.

Vernice Ferguson
Chief, Nursing Department

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The Nature of Rheumatoid Arthritis

Virginia Livermore, *R.N., BSN*

Rheumatoid arthritis (RA) is a subacute, or chronic recurrent systemic inflammatory disease primarily involving the joints. The word "arthritis" literally means an inflammation of a joint, but it also describes about 100 different conditions which cause aching and pain in the joints and connective tissues throughout the body, although not all of these conditions necessarily involve inflammation. Rheumatoid arthritis is one of the most common conditions associated with inflammation. RA is the most serious, painful, and potentially crippling of all arthritic forms and is frequently combined with a variety of extra-articular manifestations. The disease is progressive. In children, the disease is referred to as juvenile rheumatoid arthritis, or JRA.

Symptomatology of RA

Clincial manifestations of RA include a recurrent inflammation involving the synovium, or lining of the joints, destruction of adjacent cartilage and bone, and the presence in the blood of the rheumatoid factor, a very complex protein.

The insidious progression of RA generally begins with systemic symptoms, including: weakness; weight loss; loss of appetite; general fatigue and low-grade fever, followed by what are known as the cardinal, or articular symptoms, of RA. These include swelling, warmth, redness, tenderness or pain, and limitation of function of the joint or joints involved. Generalized and prolonged morning stiffness continues as a characteristic articular symptom. The joint pain, soft tissue swelling, effusion, and limitation of motion may be present in varying degrees.

Joint symptoms usually originate in the hands in adults, particularly the proximal interphalangeal and metacarpophalangeal joints. RA also attacks the large peripheral joints, including the knees, ankles, wrists, and elbows; and in some cases virtually all the peripheral junctures may be involved. Although the initial distribution of affected joints is often spotty, RA tends to be bilaterally symmetrical.

Progression of RA

RA appears slowly and deceptively, rarely suddenly, and rapidly progresses to an acute damaging phase. The period from the onset of symptoms to the time the patient consults a physician varies greatly. It is understandable that a patient may not seek medical advice when only mild symptoms occur and stiffness is limited to the hands. Swelling and pain in the larger joints, however, generally cause the patient to seek medical attention.

The course of this disease, characterized by spontaneous remissions and exacerbations, varies greatly from patient to patient. Each exacer-

bation increases the amount of joint destruction. Early in the destructive process, foot, knee, and/or wrist motion precipitate pain and muscle spasms; therefore, movement is limited. An effort to maintain flexion is beneficial to decrease episodes of pain. Deformities may occur if not properly treated.

The disease process within the joints occurs in the synovial membrane and articular capsule. The pathophysiology underlying the joint destruction results from inflammation of the joint (synovitis). Chronic synovitis with attendant synovial proliferation and joint effusion leads to ligamentous instability, misshapened joints, distended capsule, torn ligaments and tendons, and muscle weakness about the joint. Subsequent joint instability, deformity, malfunction, and ready fatiguability can result. Further inflammation can lead to fibrous and bony ankylosis.

The extra-articular manifestations of RA include vasculitis, atrophy of the skin and muscle, subcutaneous nodules known as rheumatoid nodules (20-25 percent of the cases), lymphadenopathy, splenomegaly (5-10 percent of the cases), leukopenia, Sjogren's syndrome (30 percent of the cases) and anemia. Lung involvement may include pleurisy (15 percent of the cases). Pericarditis may occur in a small percentage of patients, and peripheral neuropathy is occasionally seen. The extra-articular involvement suggests ongoing activity of the disease, and, with the possible exception of rheumatoid nodules and anemia, may be associated with increased mortality.

Incidence and Etiology of RA

Although the etiology of RA is unknown, two current theories suggest either a virus as the causative agent, or that RA is a disorder of the immune system. Some suggest that an infection may trigger a chain of events leading to autoimmunity even though the virus itself may be gone by the time the disease develops.

Six and one-half million Americans have RA. The age of the patients varies, with disease onset ranging widely from approximately 20 to 60 years of age, and a peak incidence occurring between 35 and 45 years of age. Eighty percent of the cases are found in individuals between the ages of 25 and 50 years. RA affects 1-3 percent of Americans annually with a female to male ratio of 3:1.

The influence of genetics is not clearly known. Family studies have failed to reveal any direct genetic transmission of the disease. For unknown reasons, agricultural workers are the most susceptible occupational group, contracting this disease at double the rate of city dwellers. After 20 years of study, however, no consistent geographical, climatic, or cultural trends have been demonstrated. It is believed that it strikes more in the lower income levels than higher income levels. This relationship probably reflects the effects of the disease on the patient's income potential rather than serving as a clue to the origin.

Diagnosis, Course, and Progress of RA

RA may follow three courses. In 1 of every 10 patients, the symptoms of RA appear, disappear and never return, but the damage done to the joints is permanent. Most spontaneous remissions usually occur within the first year. Another 10 percent of all cases follow a "malignant" course. That is, resistance to therapy occurs and causes crippling at the class IV functional level. The majority (80 percent) of cases struggle along with chronic active synovitis of varying severity.

Because of the variable nature of the disease, the **American Rheumatism Association (ARA)** and the **New York Academy** have developed

criteria for the diagnosis of RA. These criteria include:

- Morning stiffness
- Joint tenderness or pain on motion
- Soft-tissue swelling of one joint
- Soft-tissue swelling of a second joint (within 3 months)
- Soft-tissue swelling of symmetric joints (excluding distal interphalangeal joints)
- Subcutaneous nodules
- X-ray changes typical of RA
- Serum positive for rheumatoid factors
- Poor mucin precipitation in synovial fluid
- Characteristic histologic changes in synovium
- Characteristic histologic changes in nodules.

Three or four of these ARA criteria are necessary for diagnosis of "probable" RA, and five or more for diagnosis of "definite" rheumatoid arthritis.

Yet another set of criteria is the **New York** criteria:

- History of three painful limb joints (count each joint group as one joint (for example, interphalangeal joints) and score each side separately);
- Swelling, limitation of motion, subluxation or ankylosis of three limb joints (must include a hand, wrist, or foot and symmetry of one joint pair and must exclude distal interphalangeal joints, fifth proximal interphalangeal joints, and hips);
- X-ray changes (erosions); and
- Positive rheumatoid factor.

The above criteria are important in determining the prevalence of RA in our society.

Diagnosis of RA is normally made after careful review of the patient's complaints, including symptoms which might have occurred in the past; a general examination giving special attention to the joints; blood tests—to include a sedimentation rate and rheumatoid factor determination; examination of the joint fluid; biopsy of nodules if present; and X-rays.

Even though the precise cause of RA, is not yet clear and a cure is not presently known, effective treatment methods to control the disease and to prevent its resultant deformities and crippling exist. The principles of therapy must include: relief of pain, prevention of deformities, maintenance of strength and function, good directive nursing care, and patient education. Treatment requires a multidisciplinary approach involving medications, rest, a well-planned exercise program, and—if indicated—surgery.

Drug Therapy of Rheumatoid Arthritis

Cheryl Yarboro, R.N.

The treatment goals for rheumatoid arthritis include reduction of joint inflammation with consequent relief of symptoms and the preservation of the integrity of the joints. Drug management should help relieve symptoms, increase or maintain function, produce few side effects, and keep treatment cost down.

Medications used to treat RA include: anti-inflammatory agents such as aspirin, indomethacin, phenylbutazone, naproxen, fenoprofen, ibuprofen, and tolmetin; antimalarial drugs including chloroquine and hydroxychloroquine; parenteral gold therapy; penicillamine; corticosteroids; and immunosuppressive agents including azathioprine and cyclophosphamide.

Nonsteroidal Anti-Inflammatory Drugs

Salicylates form the mainstay of drug therapy for rheumatoid arthritis, and aspirin remains the drug of choice. Aspirin serves as an anti-inflammatory, an antipyretic, and an analgesic. It is cheap, effective, reasonably well tolerated, and safe for long-term use. Therapeutic dose range for an adult is the dose that provides a serum level of 20 to 40 percent. Adequate plasma levels for control of rheumatoid arthritis can only be achieved by frequent (every 4-6 hours) administration of high doses: usually up to 12-18 tablets per day in divided doses. If the patient does not respond in 4-6 weeks, serum levels of the drug should be measured. Side effects may become obvious within days, but lack of efficacy can only be established after 4-6 weeks.

The theoretical basis for the anti-inflammatory effects of aspirin involves the inhibition of vascular permeability, suppression of antigen-antibody reactions, stabilization of lysosomal membranes, inhibition of the release of catabolic enzymes from neutrophils and synovial lining cells, and inhibition of prostaglandin synthesis. In 1974, Ferreira and Vane found that prostaglandin sensitized pain receptors to stimulation by other inflammatory mediators. They explain the analgesic action of aspirin-like drugs by suggesting that these drugs prevent prostaglandin release, thus in turn prevent sensitization of the pain receptors to mechanical or chemical stimulation.

Aspirin taken in the high doses needed to control RA symptoms is associated with many side effects. Gastrointestinal upsets are common and can be alleviated in a variety of ways. Aspirin can be taken with milk, food, antacid, or administered in the enteric-coated or time-release form. Use of antacid may increase the elimination of aspirin. Enteric-coated aspirins are useful but sometimes are not fully absorbed.

Aspirin may also cause tinnitus (ringing in the ears), with or without hearing loss, which can usually be re-

versed by a small reduction in the dosage. Prothrombin time may increase and platelet aggregation may decrease due to high-dose aspirin. Microscopic blood loss from the gastrointestinal tract and an increased incidence in peptic ulcers may occur as well as alteration in the pattern of renal uric acid excretion.

Indomethacin, another anti-inflammatory drug was first used in the 1960's. It is effective in 10-50 percent of the patients, and appears to be especially effective in patients with hip disease. Indomethacin is administered in divided doses of 50 mg after meals and before bedtime. Up to 200 mg per day may be given. Indomethacin can cause serious side effects, especially in the GI tract. It may be more ulceragenic than aspirin and can cause fluid retention, aplastic anemia, an aggravation of pyschiatric disturbances, epilepsy, and other central nervous system symptoms. It is a potent inhibitor of prostaglandin synthesis and is contraindicated in patients who have developed sensitivity to aspirin.

Phenylbutazone, another extremely effective anti-inflammatory agent, is used only temporarily in acute episodes because of its multiple severe side effects. The usual dose is 300 to 400 mg per day. Some of the potentially devastating side effects include aplastic anemia, increased incidence of duodenal ulcers, and fluid retention.

Some other anti-inflammatory agents used to treat RA patients unable to tolerate aspirin include fenoprofen, ibuprofen, naproxen, and tolmetin. Various studies demonstrated little difference in potency among various anti-inflammatory agents. In a dosage of up to 2.4 grams daily, ibuprofen produces analgesic and antipyretic effects and probably has an anti-inflammatory effect equal to that of aspirin. Ibuprofen causes fewer gastrointestinal side effects than aspirin, although dyspepsia and bleeding can occur.

Fenoprofen is as effective as aspirin at dosages of 1200 mg per day. At this dosage fenoprofen has fewer gastrointestinal side effects than aspirin and can be given in dosages totaling 3.2 grams per day. This type of dosage may be required in severe or active disease. Fenoprofen acts as an inhibitor of prostaglandin synthesis. The side effects include some gastrointestinal bleeding and decreased platelet aggregation. These side effects, however, are less pronounced than those seen with aspirin.

Naproxen has the advantage of having a long serum half-life of 14-16 hours. The maximal dosage is 750 mg per day. It also acts by inhibiting prostaglandin synthesis and causes some gastrointestinal side effects which are less severe than those of aspirin. Naproxen also causes decrease in platelet aggregation.

Tolmetin is considered as effective as indocin but has fewer central nervous system side effects. The normal dosage is 800 mg daily. Severe active disease may require up to 2 grams per day. This drug causes peptic ulcers in 2 percent of patients taking it. Tolmetin causes a decrease in the sedimentation rate not seen with aspirin.

Both the older and more recently developed anti-inflammatory agents share the same therapeutic properties, and not surprisingly, they probably share the same mode of action (prostaglandin inhibition). The side effects are also very comparable.

Antimalarial Drugs

Chloroquine and hydroxychloroquine are the antimalarial drugs most frequently used to treat RA. At least 6 months of treatment with these drugs is required to reach a cumulative and maximum therapeutic effect. They are excreted slowly and continue to accumulate after cessation of drug treatment. Continued monitoring is therefore necessary.

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Antimalarial agents may be used in conjunction with corticosteroids and salicylates which can be gradually decreased in dosage and eventually eliminated after antimalarials have been used for several weeks. Side effects of antimalarials include skin rashes, nausea and vomiting, and both corneal and retinal damage. The incidence of eye toxicity is rare at low doses, but patients should have ophthalmologic examinations every 4 to 6 months while taking the drug.

Gold Therapy

Parenteral gold therapy is one of the few therapeutic agents currently believed to alter the long-term course of the disease.

Gold compounds are water-soluble and must be administered intramuscularly. The initial test dose is 10 mg of the gold salt, followed in 1 week by a dose of 20 mg. If no toxic reactions occur after the second dose, the patient receives 50 mg of gold salt intramuscularly every week for 10 to 14 weeks, every other week for 16 weeks, and then every 3 to 4 weeks indefinitely or until toxicity occurs. Toxic side effects occur in 40 percent of the patients and include dermatitis, photosensitivity, stomatitis, agranulocytosis, hepatitis, aplastic anemia, peripheral neuropathy, nephritis and nephrotic syndrome, ulcerative enterocolitis; and keratitis. Before each gold shot the patient should be given a physical examination, a urinalysis, and a complete blood count. Periodic liver function tests are also needed. If toxic side effects develop, the therapy should be discontinued.

Penicillamine Therapy

Another therapeutic agent found to be useful in the treatment of RA is penicillamine. Its mechanism of action is not known. Slow improvement occurs, requiring up to 12 months of therapy to achieve a maximum clinical benefit. When a "go slow/go low" regimen of penicillamine therapy is followed, far fewer side effects are seen. An initial daily dose of 150 mg orally is given, and then is increased by 150 mg every 4 weeks until improvement occurs or until the patient is receiving a maximum dose of 600 mg daily. A urinalysis and complete blood count must be performed each month. Loss of taste, anorexia, and nausea are side effects seen less often with a more conservative regimen. Thrombocytopenia and neutropenia usually respond to cessation of therapy and do not recur with reintroduction of the drug at a lower dose. Proteinuria may occur, but severe nephrotic syndrome and other nephropathies are less frequently seen. Penicillamine cannot be administered in conjunction with gold therapy.

Steroidal Anti-Inflammatory Drugs

Corticosteroids can be used either locally or systemically in treating rheumatoid arthritis. If a patient has a limited number of symptomatic joints, an intermittent intra-articular injection of corticosteroids is useful and may provide relief for months. But multiple intra-articular corticosteroid injections into weight-bearing joints should be avoided because they may lead to infections, and are associated with an increased incidence of degenerative arthritis. Systemic corticosteroid administration may induce a dramatic clinical response but does not alter the course of the disease.

In terms of patient satisfaction, prednisone appears to be the most effective drug available. It is probably true to say that all of the present anti-inflammatory, antirheumatic drugs are relatively impotent and not particularly effective when compared to prednisone. Generally no more than 5 to 10 mg of prednisone are required to produce effects.

Corticosteroids should be used in conjunction wth salicylate therapy

rather than as a substitute. Clinical exacerbations often result from withdrawal of corticosteroids. Manifestations of corticosteroid toxicity include weight gain, moon face, ecchymoses, diabetes mellitus, hypertension, osteoporosis, avascular necrosis of the femoral head, cataracts, mental disturbances, activation of tuberculosis, and infections.

Immunosuppressive Agents

Agents suppressing the immune response induce improvement in pateints with severe disease and may alter its course. Azathioprine and cyclophosphamide, two agents most commonly used, carry the risk of major toxic effects. These drugs are teratogenic, and associated with an increased incidence of infections and lymphoma. The risk of malignancy associated with immunosuppressive drugs is about 1 percent per patient year of use. The use of immunosuppressive agents should be restricted to patients in whom all forms of conventional treatment have failed to curb rapidly progressive disease with life-threatening complications. Immunosuppressive agents are steroid sparing, and they cause less radiologic deterioration than does gold therapy. These drugs are still experimental. Long-term studies are required to establish their safety.

It is a well recognized fact that long-term use of anti-rheumatic drugs is not desirable. In the management of rheumatoid arthritis the cause of failure of a certain drug must first be determined before the course of treatment is changed.

In summary, these medications may be used separately or in conjunction with each other to arrive at a suitable regimen that will benefit the patient and cause minimum side effects. Some of these medications cannot be used simultaneously. The concomitant use of medications can be a trial and error procedure requiring a patient be well informed as to the side effects of the medications he is taking, so he can promptly report any problems and additional discomforts to his/her doctor.

Surgical Advances and Techniques: Hip and Knee Joint Replacement

Shuying Liu, R.N.

In spite of good therapeutic management, arthritis can cause severe pain, instability of the joints, deformity, limitation of activity, and consequent disability. Surgical intervention may be necessary to attempt restoration of mobility. It is now possible to replace a knee or hip with a mechanical device that imitates the subtle and complex motion of these joints.

Total Hip Replacement

The normal hip consists of a ball-and-socket joint allowing motion in all planes through its center of rotation. The close fit of the femoral head into the acetabulum, and various ligamentous structures provide stability for the joint. Strength and stability are also reinforced by powerful muscles around the hip joint. Strong muscles activate the joint and help propel walking or running with a uniform, coordinated movement. Destruction of the hip joint by the arthritic process often calls for hip replacement with a prosthetic device to restore mobility.

John Charnley of England introduced the total hip replacement, or "low-friction arthroplasty." According to Charnley's technique and prosthesis, the hip is approached laterally and the greater trochanter is removed to allow a better view of the operating field. It is subsequently reattached by wires. The capsule of the hip joint is then excised, the femoral head resected, and acetabulum reamed with a power reamer. A high-density polyethylene socket is then anchored into the acetabulum, and the metallic femoral head is cemented into the bone with a self-curing acrylic cement (figure 2).

Generally, this operation results in the total absence of pain, improvement of mobility, early weight-bearing, and excellent gait. What then should be the nurse's role in pre- and postoperative care of the patient undergoing arthroplasty?

Preoperative Nursing Care

- The prosthetic devices used for hip replacement, and treatments during the post-op phase should be explained to the patient.
- The appropriate respiratory therapy should be taught to the patient.
- The patient should receive instruction on the post-op exercise program and the use of crutches without weight-bearing on the affected hip.
- The potential necessity for blood replacement during and after surgery should be explained.
- To minimize post-op infection, the patient should scrub his/her skin on the operative side with an antiseptic solution for 3 days prior to surgery.
- Psychological and emotional support is absolutely necessary.

Postoperative Nursing Care

Generally, postoperative nursing care for total hip replacement patients is the same as other patients having undergone major surgery. The nursing care must provide hygienic needs as well as preventive measures for embolic and respiratory complications, gastrointestinal dysfunction, and genitourinary complications.

Specific Postoperative Nursing Care of Total Hip Replacement

Postoperative dislocation, a serious complication of total hip replacement, can occur with incorrect positional changes. This is due to the break in the integrity of the hip joint occurring during surgery, since the capsule and the muscle surrounding the hip have been surgically incised. Following surgery, the operative leg must be maintained in abduction to prevent hip dislocation. Abduction can be maintained by use of an abduction splint, Buck's traction, or by placing two pillows between the legs.

Neurovascular checks every 2-4 hours for 24 hours make certain that the patient can dorsi- and plantar-flex the foot on the operative leg to ensure that the peroneal nerve is intact. Peroneal nerve palsy is a common complication seen after orthopedic surgery. Assessment of the pressure on the peroneal nerve is very important; if the nerve is further traumatized apart from trauma incurred as a result of surgery, there may be complete paralysis of the muscles of the anterior compartment. Consequently, the patient could not actively dosiflex the foot, resulting in foot drop. Fortunately, spontaneous recovery usually occurs if the problem is discovered early.

The head of the patient's bed should not be elevated more than 45 degrees.

The nurse should carefully monitor intake and output. Following major surgery, some bleeding from the wound is anticipated.

Depending upon the doctor's approval, the patient may turn to the operative side only, or may turn to the unoperative side only. Despite these preferences pillows are needed between the legs and at the back.

Prophylactic antibiotics should be administered, as well as anticoagulants in order to prevent infection, thrombophlebitis, and pulmonary embolus.

To avoid muscle spasms, pain and irritation to the joint, the patient's leg should not be touched after the operation before explaining what is going to be done.

The timing of progressive ambulation usually depends on the doctor's preference.

General exercise program for patients following hip arthroplasty is as follows:

1st Postoperative day: Stand with walker and partial weight bearing; walk a few steps as tolerated.

2nd day: Walk as tolerated with partial weight bearing; may sit in high chair for 20-30 minutes with knee flexed.

3rd and 4th day: Same as the second day.

5th day: Full weight bearing; encourage patient to bend knee while walking.

The patient should be helped out of bed on the operative side.

Home Education Following Total Hip Replacement

The patient should be reminded of the importance of maintaining the hip in abduction at all times until instructed otherwise, and use a pillow between the knees when lying in a supine or side-lying position and when turning. The patient should not permit the affected leg to cross the midline of the body.

The patient should be advised against overexertion. However, frequent short walks should be encouraged. Avoid sitting for more than an hour at a time to minimize hip flexion. The patient should walk with a walker, crutches, or a cane until the doctor determines whether the patient still needs a walking aid.

Knee Replacement

The normal knee is characterized by an extremely ingenious combination of stability and mobility. Unlike that of the hip joints, knee stability depends on its ligamentous structure rather than on the design of the joint itself. An intricate group of strong ligaments inside and outside the joint-supporting muscles provide stability.

Knee movement includes rotary, gliding, and axial rolling motions. The main weight-bearing rotation includes two articulations: The patellofemoral bearing surface between the patella and the femur, and the tibiofemoral articulation between the tibia and the femur.

Several different prosthetic designs can be used for knee replacement and can be classified as follows:

Geometric-type total knee replacement: The articular surfaces of both the distal femur and the upper tibia are replaced by a prefabricated joint fixed to the bone with self-curing acrylic cement. Ligamentous structures provide stability.

Polycentric-type total knee replacement: The four pieces of a polycentric prosthesis are designed so that both the tibia and the femoral joint surfaces are replaced, preventing constraints between the femoral and tibia components; thus, the polycentric effect of normal articulation of the femur with the tibia is simulated.

Total hinge prosthesis: Waldius and Shier designed the metal hinge prosthesis currently in general use. After resection of the knee joint, each part of the device is inserted into its femoral and tibia shaft to admit the hinge portion of the implant. Both the femoral and the tibia stems are usually cemented into place, allowing firm anchorage and preventing migration in the medullary canal.

Specific Postoperative Nursing Care of Total Knee Replacement

- To detect any compromise from pressure and swelling at the surgical site, neuro-vascular foot checks should be performed.
- As in total hip replacement, integrity of the peroneal nerve should be assessed.
- Circulation checks of 1° for 24 hours should be made.
- Signs of hemorrhage must be detected.
- Infection is a very serious complication of total knee replacement. Careful administration of antibiotics to prevent infection, and early recognition of osteomyelitis are the nurse's responsibilities.
- The operative knee should be immobilized with a posterior splint and wrapped in ace bandages.
- The foot of the bed should be elevated and the knee gatch elevated in a straight plane. A rolled towel should support the ankle.
- The operative leg should not be elevated with pillows.
- A general ambulation program, unless the doctor orders otherwise, should be followed.

1st day: The patient should be out of bed in a chair with his leg elevated, and stand with a walker and partial weight-bearing on the affected leg.

2nd day: A knee splint with lateral stays is applied to the operated leg. The exercise is the same as the first day until the fifth day.

5th day: The patient should attempt full weight-bearing; knee sling exercises usually begin. After starting knee sling exercises, the splint should be removed after walking, and the patient should sit with his knee flexed. The patient should continue to walk with the splint on until ordered otherwise; moreover, the patient must wear a splint at night to maintain the knee in full extension.

The patient who has undergone total knee replacement should be instructed to follow these precautions upon leaving the hospital: avoidance of rough or hilly terrain; avoidance of sports and tennis; avoidance of jumping, competitive deep-knee bending and leg-crossing, or *any* activity causing pain.

Data indicate that total hip replacement is generally more successful than knee replacement. Loosening is the primary cause of the failure of the knee prosthesis. As a result, continuing research and development of new implant materials and improved attachment of implant to the bone are the major goals of the orthopedic investigator.

Patient Activity in RA

To Move or Not to Move

Maureen Knippen, R.N., BSN

Therapy of RA must strike a balance between physical and emotional rest and exercise: the degree of rest and activity must be decided individually for each patient on a regular basis. The extent and severity of symptoms should direct the course of physical therapy.

Some controversy exists about how much activity should be permitted during an acute episode of RA. Although there is a paucity of research recorded in this area, Partridge and Duthrie showed that symptoms of RA diminished more in a group of completely immobilized patients than in a group permitted freedom of activity. The results, however, were not statistically significant and should be considered in light of the deleterious effects of prolonged bedrest, such as vascular complications.

Nurses can and should play a role in assessing how much activity should be allowed by keeping daily records of the patient's disease activity utilizing a modification of the activity index. These indices include:

- **Duration of morning stiffness** (inquire daily by what time stiffness wears off after arising).
- **Time of fatigue onset,** fatigue having been found to be a fairly reliable indicator of disease activity. Fatigue has been noted to occur on the average of 4 hours after rising.
- **Grip strength.** This can be measured daily by using a sphygmomanometer. The mercury column must be open at the top; the rubber part of the cuff is folded twice and the cotton flap rolled around it. The system is inflated to 20 mm Hg. The arm is unsupported as the patient squeezes as hard as possible. Three tries are allowed for each hand; the average reading is recorded.

Articular or joint rest is imperative during a flare of RA in order to decrease inflammation, pain, and possible deformity. Splinting the affected joint often decreases muscle spasm and pain caused by inflammation, and affords proper alignment for the affected limb while preventing deformities or correcting those already present.

The benefits of therapy can only be as effective as the patient allows them to be. Therefore, emotional rest, support, and reassurance are high on the list of priorities for the arthritic patient. It is the nurse's responsibility to explain, clarify, listen to, and assist the patient during these difficult periods. Once the patient understands and accepts each aspect of his therapy, his cooperation can hasten the recovery process.

Exercise was mentioned earlier as a therapeutic priority for the arthritic patient; such exercise must be individualized in order to take into account the phase of arthritis present. Before deciding on an exercise program, the following factors must be considered:

- Synovitis not only weakens the joint capsule but creates intra-articular swelling. This tends to cause joint laxity rather than restriction.
- Extra-articular swelling causes joint compression which can limit range of motion.
- Pain causes spasms in the flexor-adductor muscles which limits joint extensions.
- Inactivity secondary to pain increases the risk of adhesions and muscular weakness.

Duration of pain following exercise can be a guide for the exercise program. Pain or discomfort resulting from exercise should not last longer than 1 hour following exercises. Pain lasting several hours or longer indicates that the exercises were too stressful and should be reduced. Exercises should be undertaken at the time of day the patient feels most comfortable.

The nurse, as another facet of his/her role in RA therapy, should allow the patient to retain some independence despite his difficult predicament. Rheumatoid arthritis generally strikes during a person's most fruitful, productive years, rendering him hopelessly dependent on others for even the most basic needs. Nurses must recognize the need for independence and incorporate it into their care plan by allowing the patient active participation in his plan of care. The nurse should encourage as much activity and physical independence as is therapeutically tolerable to help keep the patient's integrity and self-worth intact.

Since the treatment modalities of rest balanced with exercise are based solely on experience rather than hard data, nurses can be aided in their evaluative, therapeutic, and supportive roles by doing personal research in this area. It will be only through research that we will be able to define a workable course of therapy with proven results.

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